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Contribution of Tobacco to Agriculture Receipts in Four Prominent Tobacco Producing States

Brian Lacefield

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CONTRIBUTION OF TOBACCO TO AGRICULTURE RECEIPTS IN FOUR
PROMINENT TOBACCO PRODUCING STATES

A Thesis

Presented to

the Faculty of the Department of Agriculture

Western Kentucky University

Bowling Green, Kentucky

In Partial Fulfillment

of the Requirements for the Degree

Masters of Science

by

Brian Douglas Lacefield

August 1998

CONTRIBUTION OF TOBACCO TO AGRICULTURE RECEIPTS IN FOUR
PROMINENT TOBACCO PRODUCING STATES

Date Recommended 7/6/1998

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[Signature]
Edmund Bray

Edmund Bray 7/27/98
Dean, Graduate Studies and Research Date

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CONTRIBUTION OF TOBACCO TO AGRICULTURE RECEIPTS IN FOUR
PROMINENT TOBACCO PRODUCING STATES

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61 Pages

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Agriculture receipt data were obtained from USDA Agriculture Statistics on four prominent tobacco producing states--North Carolina, Kentucky, Tennessee, and Virginia-- for the period of 1946 through 1995. The data were adjusted for inflation according to the Consumer Price Index and averaged for five-year periods beginning with 1946-1950 and continuing through 1991-1995. There were four objectives of the study.

The first objective was to compare these states for annual agriculture receipts, crop receipts, and livestock receipts. State total agriculture receipts ranged from 1.8 to 3.2 billion dollars in 1946-50 and from 1.4 to 4.1 billion dollars in 1991-95. For total agriculture receipt, rankings were as follows: North Carolina highest, Kentucky intermediate, and Tennessee and Virginia lowest and about equal. State rankings for crop and livestock receipts were the same as those for total agriculture receipts except the North Carolina ranking for livestock receipts went from lowest to highest among the states during the period of study. In Kentucky and Tennessee, crop and livestock contributions were approximately equally throughout the study. Crop receipts exceeded

livestock receipts in NC until the 1980s, while in Virginia livestock receipts consistently exceeded crop receipts.

The second objective was to determine the contribution of tobacco receipts and their relationships to the receipts of other agriculture commodities. Average state tobacco receipts in dollars ranged from 254 million to 1.8 billion dollars in 1946-50 and from 129 to 723 million dollars in 1991-95. State rankings for tobacco receipts were as follows: North Carolina highest, Kentucky intermediate, and Tennessee and Virginia lowest and approximately equal. Tobacco receipts (dollars) for Kentucky, Tennessee, and Virginia were relatively consistent over the 50-year period; however, the tobacco receipts for North Carolina decreased from 1.8 billion to 723 million dollars during the period. When tobacco receipts were considered as a component of total agriculture receipts, the tobacco contribution decreased from 54% to 18% in North Carolina and from 35% to 26% in Kentucky, whereas the proportion remained rather consistent in the 10% to 15% range for Tennessee and Virginia. When tobacco receipts were expressed as a percentage of crop receipts, the percentages were highest in Kentucky, intermediate in North Carolina, and lowest in Virginia and Tennessee. Correlations between tobacco and total agriculture receipts were positive and significant for each state except North Carolina.

The third objective of the study was to examine the contribution of specific crop and livestock enterprises to agriculture receipts during the 1981-1995 period. Total agriculture receipts increased in North Carolina but decreased in the other states. The increase in North Carolina resulted from increases in livestock receipts (collectively),

swine, poultry, vegetables, and other crops. The decrease in Kentucky, Tennessee, and Virginia resulted from decreases in livestock (collectively), dairy, swine, crops (collectively), fruit and tobacco receipts.

North Carolina agriculture income has increased and reflects more contribution from livestock (collectively), swine, poultry and less from tobacco. Kentucky agriculture income has decreased and reflects decreases from livestock and crops. Kentucky agriculture receipts are more dependent upon tobacco than are the receipts in the other states.

The fourth objective was to relate diversification patterns from the other states to Kentucky's present status and future opportunities. In 1995, tobacco contributions to agriculture receipts were North Carolina (15%), Kentucky (21%), Tennessee (11%), and Virginia (8%); poultry contributions were North Carolina (29%), Kentucky (4%), Tennessee (10%), and Virginia (31%). Although considered minor contributors at present, hay and other crops (greenhouse and nursery plants) show promise for further diversity of Kentucky agriculture.

CHAPTER I

INTRODUCTION

Historically, tobacco has been a vital part of Kentucky's economy. Presently, it is a one- billion dollar industry employing more than 100,000 Kentuckians.

Tobacco farming is not only a source of income for Kentucky families but it is also a cultural tradition passed from one generation to another. Tobacco is grown in all but one of Kentucky's 120 counties (KASS, 1997). Currently, there is no crop that can compete with or replace tobacco.

Today, tobacco producers are receiving unprecedented adverse publicity. Public perception of the tobacco industry is at its worst largely as a result of multifaceted health issues. Uncertainty of future support programs is an additional concern of tobacco producers. Tobacco presently faces an uncertain future.

Although, tobacco is grown in 21 states in the United States, North Carolina, Tennessee, Virginia, and Kentucky account for over 80% of total U.S. production. Of these four states, Kentucky is presently the most dependent on tobacco which accounted for 21% of total agriculture receipts, and 53% of crop receipts in 1995 (KASS, 1997).

Problem

The uncertainty of tobacco's future and Kentucky's dependence on tobacco point to the need for alternative forms of farm income. It should be helpful to

research what other states have done to supplement farm income and to diversify farm operations.

Objectives

The study was designed to examine historic and present data on total agriculture, tobacco, and other enterprise receipts for each of the four leading states.

Specifically the objectives are as follows:

- 1) To compare the four states for agriculture receipts since 1946
- 2) To characterize the four states for the contribution of tobacco to agriculture receipts since 1946
- 3) To explain changes in the contribution of tobacco to agriculture receipts in relation to diversification of agricultural enterprises
- 4) To relate diversification patterns from the other states to Kentucky's present status and future opportunities.

CHAPTER II

LITERATURE REVIEW

History

Tobacco (*Nicotiana tabacum* L.) is a nonfood crop. More specifically, it is a broadleaf herb whose leaves are consumed worldwide as cigarettes, cigars, smoking tobacco, chewing tobacco, and snuff. Tobacco is the most widely grown commercial nonfood plant grown in the world. It is grown as far north as Poland and as far south as New Zealand. Different areas produce special types of leaf particularly adapted to certain uses (Capehart & Grise, 1994).

Although tobacco is believed to be a native American plant, it is not considered to be native of Canada or to the eastern two-thirds of North Americas, including Kentucky (Axton, 1975). Considerable literature exists on the ceremonial use of tobacco by Native Americans and by early immigrants of North America (Legg and Smeeton, 1997). The use of tobacco by Indians, both in the Carribean and North America, was noted by early explorers including Columbus (Johnson, 1984). The Indians were smoking tobacco for a variety of ritual, social, and diplomatic purposes, as well as for personal pleasure (Axton, 1975).

Tobacco was introduced to Europe by the Spanish in the sixteenth century. It was introduced in England in 1585 by Sir Walter Raleigh (Johnson, 1984). After that

introduction, Europeans wanted tobacco for personal consumption. John Rolfe saw an economic opportunity for the colony in Jamestown, Virginia, and proposed that tobacco seeds be taken from Spanish held Cuba and cultivated in the colony. That proposal succeeded; Jamestown exported 20,000 pounds of tobacco leaf to England in 1618 (Axton, 1975). Tobacco production originated in the tidewater areas of Maryland and Virginia then moved to the Piedmont area of Virginia and the area that became North Carolina (Johnson, 1984). By 1664, total tobacco exportations to England reached 24 million pounds (Axton, 1975).

Tobacco culture crossed the Appalachian Mountains into Kentucky and Tennessee following the Revolutionary War. By 1820, tobacco production became concentrated in those areas that are prominent today-- Southern Maryland, Virginia, North Carolina, Kentucky, and Tennessee (Johnson, 1984).

Native Americans consumed tobacco mainly through smoking. Spaniards observed the Native Americans “drinking” the smoke to induce intoxication, trances, and even unconsciousness. Native Americans crumbled tobacco and packed it in cane, reed, or bamboo tubes, or wrapped it in cornhusks, and smoked it in much the same fashion as modern cigarettes. They believed the inhaled smoke possessed soul consoling properties sent to mankind as a pledge of protection from the powers that control life (Axton, 1975).

Pipe smoking was popular among American settlers during Colonial times; snuff was equally popular, but was more commonly so in urban areas. Chewing tobacco was associated with sailors and certain physical laborers. However, ca. 1820, chewing

tobacco became more prominent in all walks of life in the United States. Preference for chewing tobacco continued through the nineteenth century. Following the turn of the century, cigarette consumption replaced chewing as the most popular form of tobacco consumption (Johnson, 1984). During the 1880's a cigarette making machine was perfected, permitting mass production and further expansion of cigarette smoking during the twentieth century (Walter-Coker, 1987). Cigarettes are presently the dominant tobacco product (Capehart and Grise, 1994).

Tobacco is classified under the genus *Nicotiana*. This genus is classified into three subgenera and over 60 species (Smith, 1978). Most cultivated tobacco belongs to the species *Nicotiana tabacum* L (Legg and Smeeton, 1997). The major tobacco classes are flue-cured or Virginia, light air-cured including burley and Maryland, dark air-cured, fire-cured, sun-cured, oriental or Turkish, and cigar filler, binder and wrapper. These classes existed prior to the initiation of modern breeding research (Legg and Smeeton, 1997).

Flue-cured and burley are the two major classes used in cigarettes (Johnson, 1984). By the 1930's, flue-cured tobacco was the one most in demand in the United States (Finger, 1981). These two types accounted for 93% of the tobacco production in the United States in 1996 (Womach, 1996).

Marketing

Tobacco producers experienced cyclical price swings during the early twentieth century (Walter-Coker, 1987). James B. Duke, in 1889, built a large conglomerate of

leading tobacco firms of the day and formed the American Tobacco Company, which later became known as the “Trust.” By 1904, the Trust sold 82% of the United States cigarettes and chewing tobacco (Cunningham, 1983). Tobacco producers were at the mercy of essentially one buyer, the Trust. Prices dropped from twelve cents a pound in the 1890's to three cents a pound in 1904 (Axton, 1975). In response, tobacco producers formed a group to limit production and to market collectively. This group was known as the Dark Fired Tobacco District Planters’ Protective Association of Kentucky and Tennessee Incorporated, or generally known as the “Association.” The Association set out to limit production as a means of increasing prices.

The Trust offered enticements to growers who would agree not to join the Association; their reward was high prices for their tobacco (Cunningham, 1983). The United States Supreme Court dissolved the Trust or The American Tobacco Company in 1911 by ruling that it was in violation of the Sherman Anti-Trust Act of 1890 (Axton, 1975).

After the dissolution of the Trust, competition kept prices higher; however, there was still a need to regulate the supply of tobacco in the United States. The first supply control program initiated by the U.S. government was the Agricultural Adjustment Act (AAA) of 1933. This Act gave every tobacco farm a base acreage determined by its past production (Pugh, 1980). However, producers who did not participate could grow as much as they desired and thereby benefitted from the higher prices. In response, Congress passed the Kerr Tobacco Act (1934) that taxed non cooperators. However, the AAA 1933 and the Kerr Tobacco Act (1934) did not survive. The Kerr Tobacco Act

was repealed, and the AAA 1933 was ruled unconstitutional by the Supreme Court in 1936 (Pugh, 1980).

In 1938, the second Agricultural Adjustment Act (AAA) was passed. This legislation, known as AAA 1938, established tobacco marketing quotas and provided penalties for excess production. The AAA 1938 established a supply control and price support program that, with amendments, survives today (Womach, 1996). Amendments included a change from poundage to individual acreage allotments. In 1965, the Acreage-Poundage Program for Flue-Cured Tobacco replaced individual farm acreage allotments for flue-cured tobacco. In 1971, the burley tobacco program was changed from acreage allotments to poundage quotas (Pugh, 1980). In 1982, the No-Net-Cost Assessment enabled the tobacco program to operate at virtually zero cost to taxpayers by assessing producers a tax when their tobacco is sold (Snell, 1991).

Presently, the federal tobacco support program limits and stabilizes the quantity of tobacco produced and marketed by producers. The national marketing quota is the amount judged sufficient to meet domestic and export demand. The support price operations are financed by the USDA Commodity Credit Corporation (CCC) and guarantees minimum market prices to the tobacco producers.

Tobacco and Health

According to Kestenbaum (1981) King James I of England wrote Counter Blast of Tobacco, in 1604. In this publication King James I spoke harshly against tobacco and its

harm to the human body. King James, when examining cadavers of smokers, was the first to record that, when dissected, lungs were coated with tobacco soot (Axton, 1975).

Tobacco was believed to have medicinal uses (Axton, 1975). Doctors prescribed it for colds and fever remedies and even as a preventive to the plague (Kestenbaum, 1981). Throughout the centuries, as tobacco consumption grew, doctors began to question its medicinal merits. Some doctors began to suspect a relationship between tobacco and certain diseases (Kestenbaum, 1981). In the early eighteenth century, case studies describing the possible relationship between tobacco consumption and certain cancers began appearing in the European and American medical journals. However, it was the twentieth century before scientists began to study the problem seriously (Kestenbaum, 1981).

By the 1950's, major studies were identifying strong association between smoking and disease. Sir Richard Doll, in England, examined the smoking habits and characteristics of 34,000 physicians. He recorded sickness and death that occurred between an initial and follow up contact. Smokers were fourteen times more likely to develop cancer than nonsmokers. Similar studies were being conducted in Sweden and in the United States, and the results were similar to Doll's conclusions (Kestenbaum, 1981).

Data on the effects of tobacco and health accumulated throughout the 1950's, prompting the release of two landmark reports. The first, by the Royal College of Physicians of London, was released in 1962. This report concluded that cigarette smoking was a cause of lung cancer and bronchitis. The report also stated the likelihood

that cigarette smoking contributed to coronary heart disease. The second report was issued two years later in 1964 by the Advisory Committee to the U.S. Surgeon General and was based on 6,000 studies. The report entitled “Smoking and Health” concluded that cigarette smoking was a health hazard (Kestenbaum, 1981).

The 1964 Surgeon General’s report led to several legislative and administrative actions. The first was the Federal Cigarette Labeling and Advertising Act of 1965, issued by the Federal Trade Commission, which required a health warning on cigarette packages. In 1967, the Federal Communications Commission required that broadcast stations carrying cigarette advertising must also carry anti-smoking messages. The Public Health Cigarette Smoking Act of 1970 prohibited the advertising of cigarettes on radio and television and strengthened the warning label on cigarette packs (Johnson, 1984).

The 1964 Surgeon General’s report stimulated studies around the world and led to a sequel publication in 1979. The second Surgeon General’s report reviewed 30,000 studies and concluded that cigarette smoking was the largest preventable cause of death in the United States (Kestenbaum, 1981). Concurrently, the Tobacco Institute produced a report entitled “Smoking and Health 1964-1979, the Continuing Controversy.” This report attempted to refute the Surgeon General’s 1964 report (Johnson, 1984).

White and Froeb reported in the New England Journal of Medicine in 1979 that tobacco can be hazardous to passive smokers (nonsmoker) (Kestenbaum, 1981). These results sparked public interest more than the initial Surgeon General warning. The approach that “If you smoke your health will be affected” did not have as much effect as

“If the person next to you smokes it will harm you” (Kentucky’s Prospectus on Tobacco, 1993).

The health issue has caused several changes in the tobacco industry. The percentage of filtered cigarettes has increased since the initial health studies (Mann, 1979). Cigarette consumption per capita has declined in the United States (Johnson, 1984; FAO, 1992). However, the impact of these issues on tobacco receipts to farmers is not known.

Economic Value of Tobacco

Tobacco is the United States’ sixth highest crop in value of production. In 1996, 2.85 billion dollars were generated from tobacco production. North Carolina, Kentucky, Tennessee, and Virginia produced 78% by value of the total U.S. tobacco. North Carolina produced 38%, Kentucky produced 26%, Tennessee, and Virginia produced about 7% each. North Carolina and Virginia produced 63% and 10%, respectively, of the U.S. flue-cured tobacco, whereas Kentucky and Tennessee produced 70% and 17% of the U.S. burley tobacco, respectively (NASS, 1997).

Dollars generated by tobacco farmers are “rolled over” or multiplied within the economy. “Prospectus for Kentucky’s Tobacco Industry” stated that money generated from tobacco will “roll-over” two to three times within local communities. The money goes through warehouse owners, equipment dealers, input suppliers, banks, and other businesses (Prospectus, 1993). Additional dollars are generated through value-added to

the tobacco and indirect expenditures which support jobs in sectors supplying inputs and materials. Tobacco growing, manufacturing, and marketing support an estimated 500,000 U.S. jobs directly and many more indirectly (Gale, 1997).

Tobacco production in North Carolina, Kentucky, Tennessee, and Virginia is important to total agriculture receipts. In 1996, the contribution of tobacco to total agriculture receipts for the states were as follows: North Carolina 13%, Kentucky 23%, Tennessee 9%, and Virginia 8%. The percentages of tobacco as a part of crop receipts for the states were: North Carolina 30%, Kentucky 44%, Tennessee 16%, and Virginia 21% (NASS, 1997).

In 1996, over 93% of the U.S. tobacco production was flue-cured and burley tobacco. Both of these cigarette types are dominant in North Carolina, Kentucky, Tennessee, and Virginia (Womach, 1996). Flue-cured tobacco is grown primarily in North Carolina and Virginia, while burley is produced primarily in Tennessee and Kentucky (Mann, 1975).

CHAPTER III

MATERIALS AND METHODS

Data Collection

The study was based upon agriculture receipts from four states: North Carolina (NC), Kentucky (KY), Tennessee (TN), and Virginia (VA). In 1995, these four states accounted for 81% of all the tobacco produced in the United States (NASS, 1996). Agriculture receipt data consisted of an annual time series from the period 1946-1995 (50 years). Additional data were collected from the United States Department of Agriculture state statistical reports. Primary receipts included total agriculture, livestock, crops and tobacco. Other agriculture receipts were studied for the period of 1981 to 1995 (15 years). These included swine, poultry, dairy, beef, miscellaneous livestock, vegetables, fruit, and other crops.

Data were collected in nominal values, or their dollar value at current market prices, (Cramer and Jenson, 1994) and were converted to real values to adjust for inflation. In real values, the data became economic values expressed in terms of a base year index, thereby eliminating the effect of price changes (Cramer and Jenson, 1994). The Consumer Price Index (CPI) used 1982/84=100 as the base (Taylor, 1996).

Data Analysis

Real value receipts for total agriculture, livestock, crops and tobacco during the

50-year period were averaged for five-year periods starting with 1946 -1950 and ending with 1991 -1995. Five year averages reduced effects of annual fluctuation and simplified graphical presentation of the results. Graphs were generated by HARVARD GRAPHICS v. 3.0 (SPC, 1994).

Linear correlation coefficients were calculated on annual receipt data from the 1946-1995 period for each state. The variables included total agriculture, livestock, crop, and tobacco receipts. Correlations were also calculated on the 1981-1995 (15 years) data. The variables were total agriculture receipts, livestock (beef, dairy, swine, poultry, and miscellaneous), crops (tobacco, tobacco as a percent of total receipts, vegetables, fruits, and other crops). Correlations were calculated using STATISTX FOR WINDOWS (Analytical Software, 1996).

While the correlation coefficient shows the relationship between two variables it does not indicate the degree to which one variable may contribute to another. To evaluate the contribution of each individual enterprise to total agriculture receipts, the percentage was calculated by dividing annual cash receipts for the enterprise by the total agriculture receipt for that year. These percentage data were calculated for each enterprise for the 15-year period (1981-1995).

CHAPTER IV

RESULTS

1946-1995

Total Agriculture Receipts: Livestock and Crops by State

Total, crop, and livestock receipts for the first (1946-51) and last (1991-95) five-year period are present in Table 1. In real dollars, the differences between the two periods for total receipts were not consistent among the four states. North Carolina (NC) ranked first and Kentucky (KY) ranked second in both periods; however, Tennessee (TN) and Virginia (VA) rankings were inconsistent. Crop receipts were higher in the first than in the final period for all states. Also, the descending rankings of states (NC, KY, TN, VA) were consistent for both periods. For livestock receipts, NC ranked lowest in the first period and highest in the final period; KY ranked second in both periods; while TN and VA were inconsistent in their rankings.

Total, crop, and livestock receipts for successive five-year averages throughout the 50-year study (1946-1995) are presented graphically in Figures 1,2, and 3. For total agriculture receipts (TAR), the states other than NC followed similar patterns, namely that there was little change during the first three periods followed by an increase throughout the 1976-1980 period. This increase was followed by a decrease through the 1986-1990 period. From this period through the last observation, TAR remained

Table 1. Cash receipts for the 1946-51 and 1991-95 5-year averages

Cash Receipts (Avg/Year)	State	1946-51	1991-95
(million \$)			
Total	NC	3246	4146
	KY	2259	2209
	TN	1896	1417
	VA	1757	1485
Crop	NC	2640	2005
	KY	1081	1064
	TN	974	755
	VA	850	535
Livestock	NC	606	2142
	KY	1178	1145
	TN	922	662
	VA	907	951

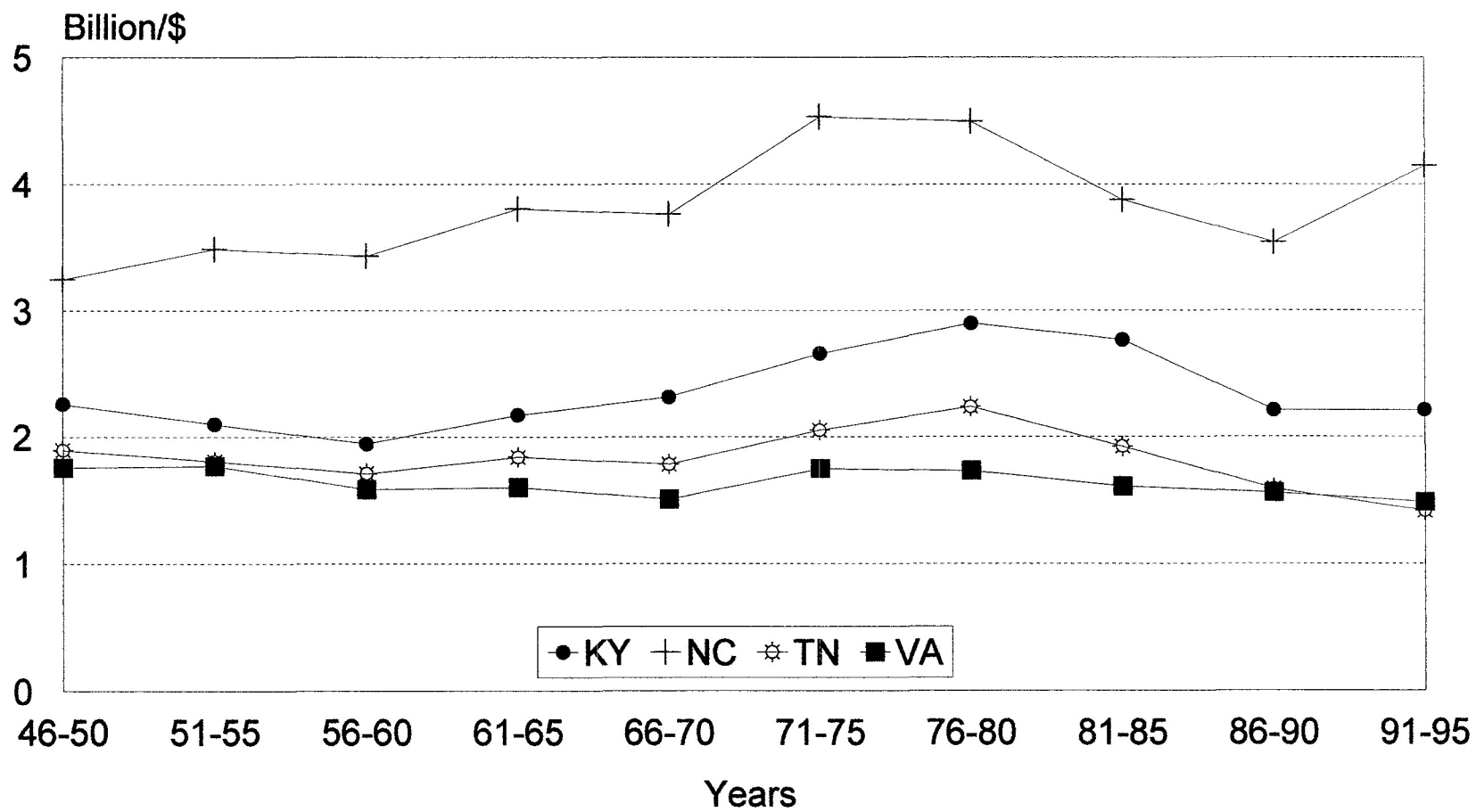


Fig. 1. Total Agriculture Receipts for NC, KY, TN, VA (5-year averages 1946-95)

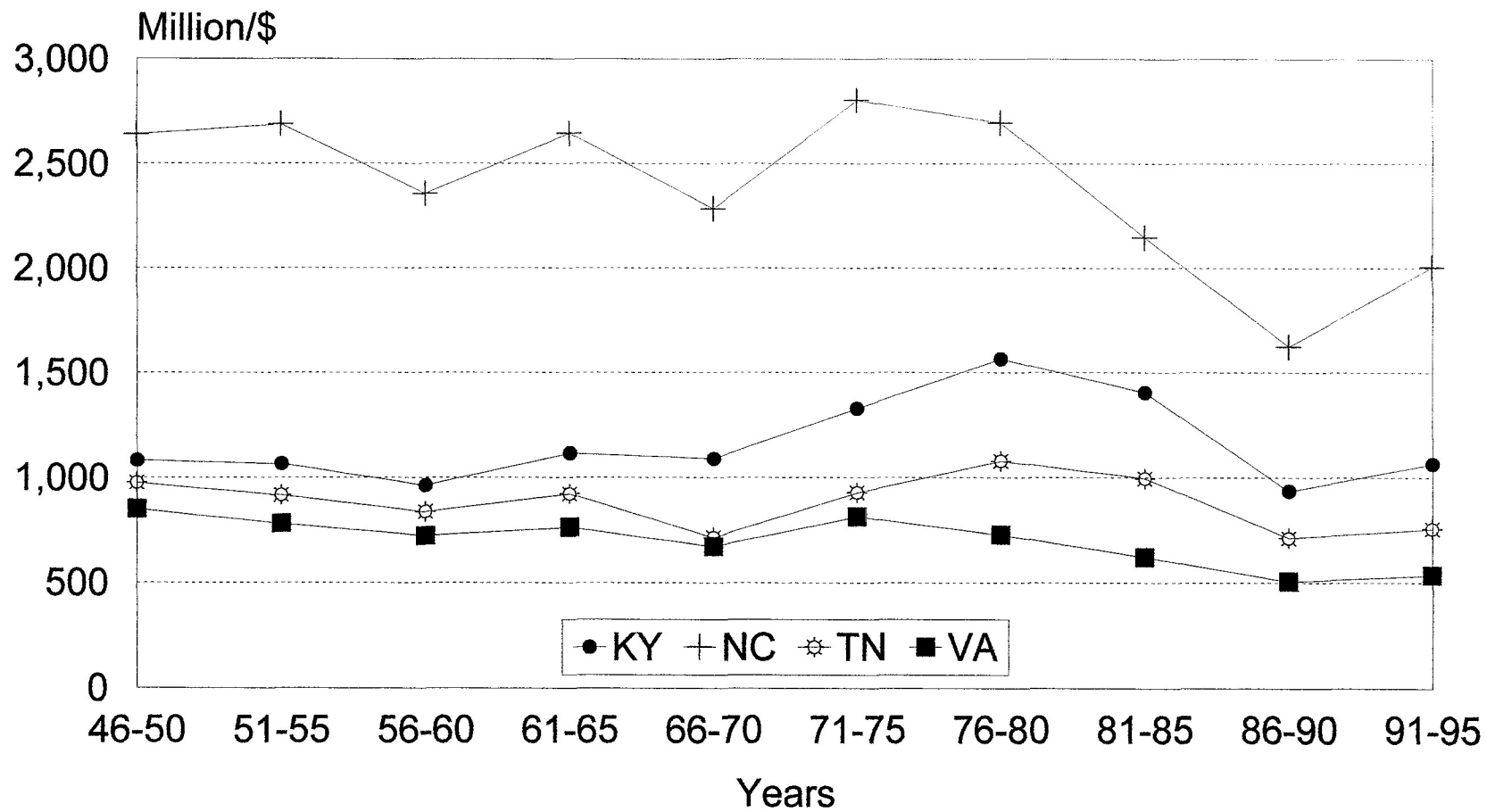


Fig. 2. Crop Receipts for NC, KY, TN, VA (5-year averages 1946-95)

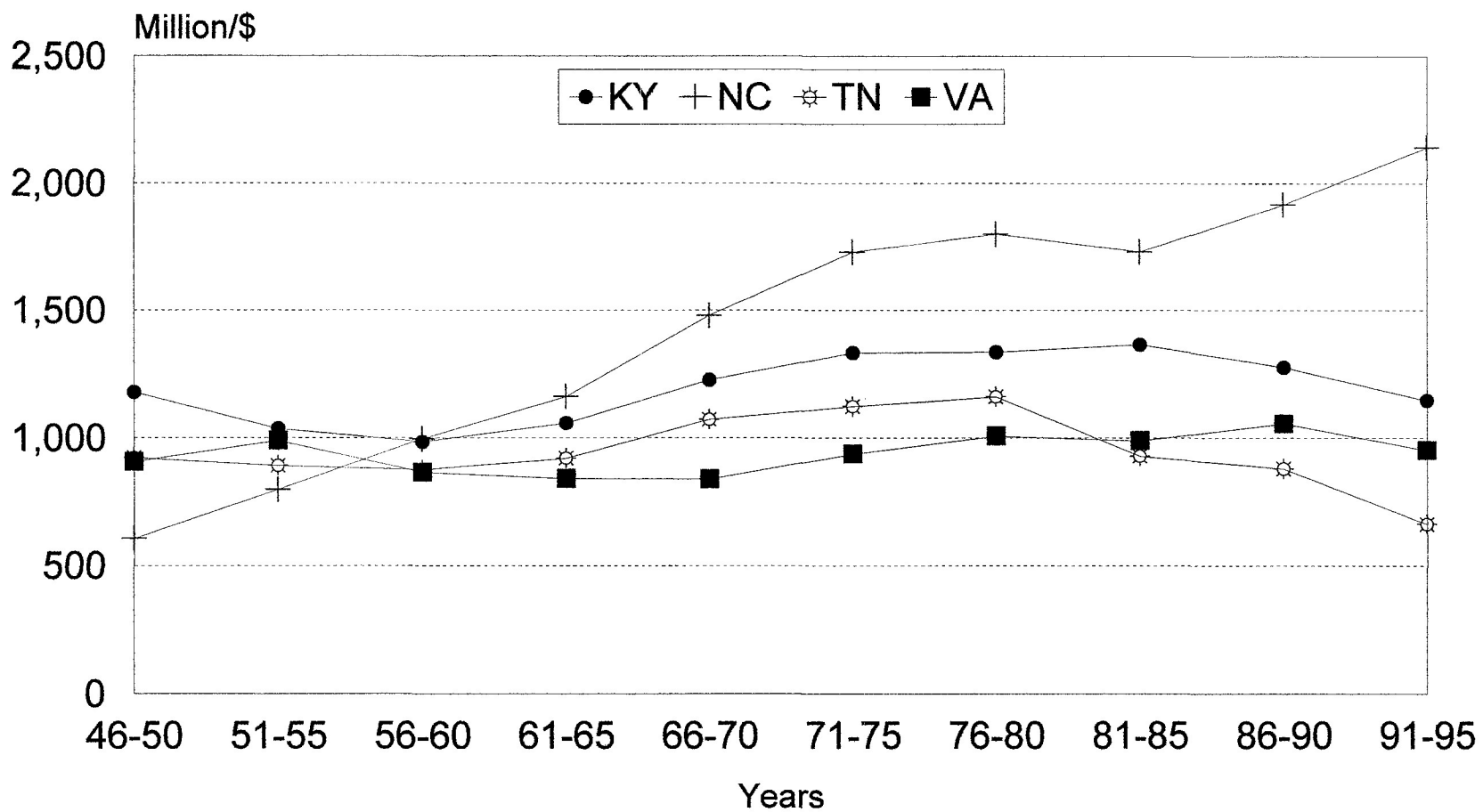


Fig. 3. Livestock Receipts for NC, KY, TN, VA (5-year averages 1946-95)

relatively consistent. The TAR for NC increased from the first period to 1971-1975, declined from 1976-1980 through the 1986-1990, then increased to the last observation. Crop receipts for the four states followed the same pattern as TAR. Livestock receipts in KY and TN followed similar patterns with an initial decrease by the second observation followed by an increase to 1976-1980 in TN and to 1981-1985 in KY. This increase was followed by a decrease through the last observation for both states. Livestock receipts for VA increased initially to 1950-1951, then decreased to 1966-1970. The decrease was followed by an overall increase throughout the last observation. Livestock receipts for NC increased throughout the 50-year period.

Tobacco Receipts by State

Tobacco cash receipts, percent of tobacco contribution to TAR, and crop receipts for the first (1946-51) and last (1991-95) five- year period are presented in Table 2. In real dollars, the differences between the two periods for tobacco receipts were not consistent among the four states. For example, NC ranked first and KY ranked second in both periods; however, TN and VA rankings were inconsistent. As a percent of TAR, tobacco contributions were highest in NC and second in KY in the first period but were reversed in the last period. TN and VA rankings were also inconsistent. Percent contribution to crop receipts from tobacco decreased in each state between the first and last period. Rankings for the states were KY highest, NC second, VA third, and TN last for both the first and last period.

Tobacco receipts, tobacco as a percent of TAR, and tobacco as a percent of crop receipt for successive five-year averages throughout the 50-year study are presented in

Table 2. Tobacco receipts and percent tobacco contributions to total and crop receipts

Tobacco	State	1946-51	1991-95
Cash Receipts (Avg/Year)	NC	1758	723
(million \$)	KY	794	570
	TN	254	170
	VA	299	129
Tobacco/Total	NC	54	18
(%)	KY	35	26
	TN	13	12
	VA	17	9
Tobacco/Crops	NC	66	36
(%)	KY	74	53
	TN	26	23
	VA	35	24

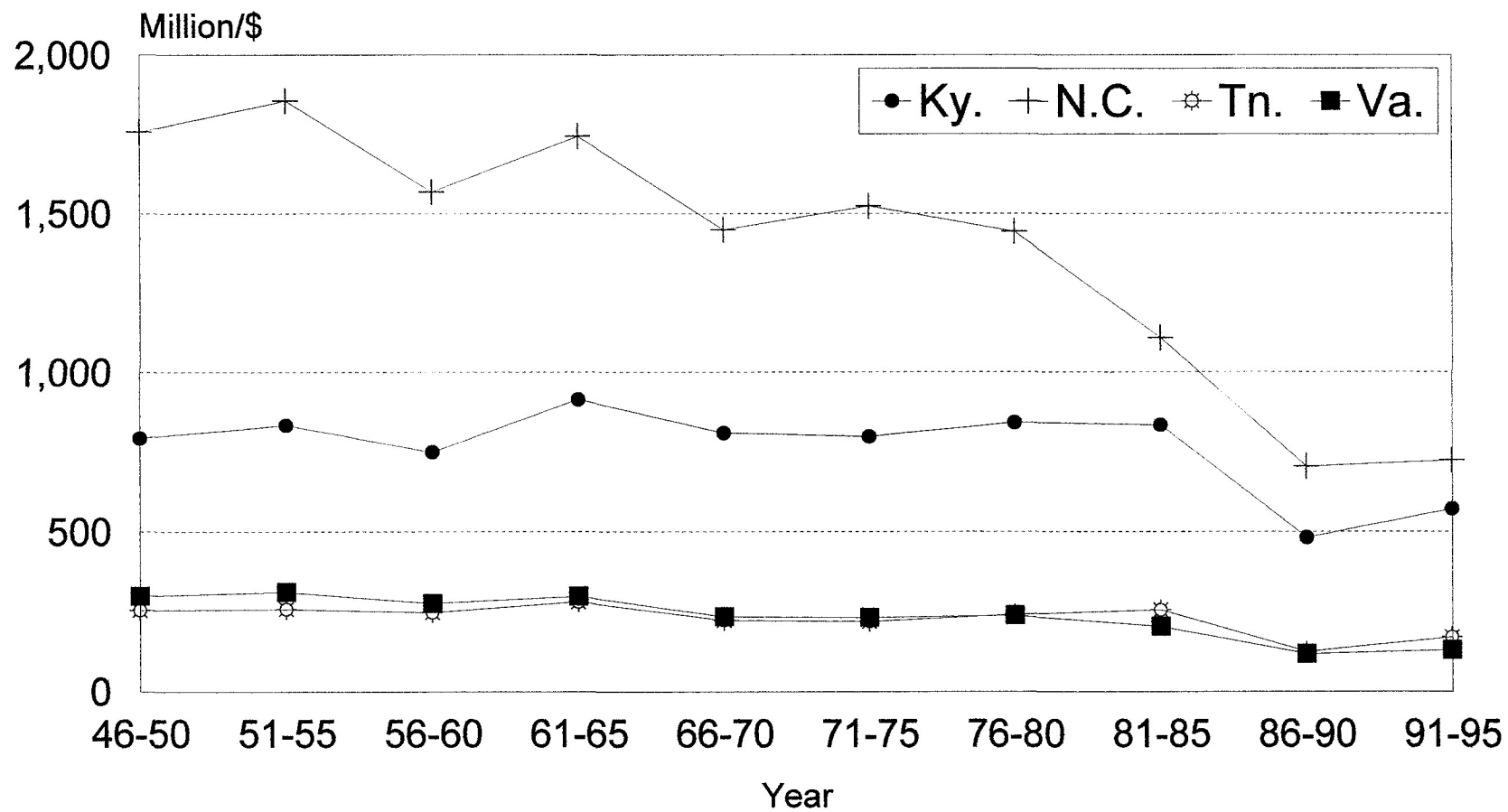


Fig. 4. Tobacco Receipts for NC, KY, TN, VA (5-year averages 1946-95)

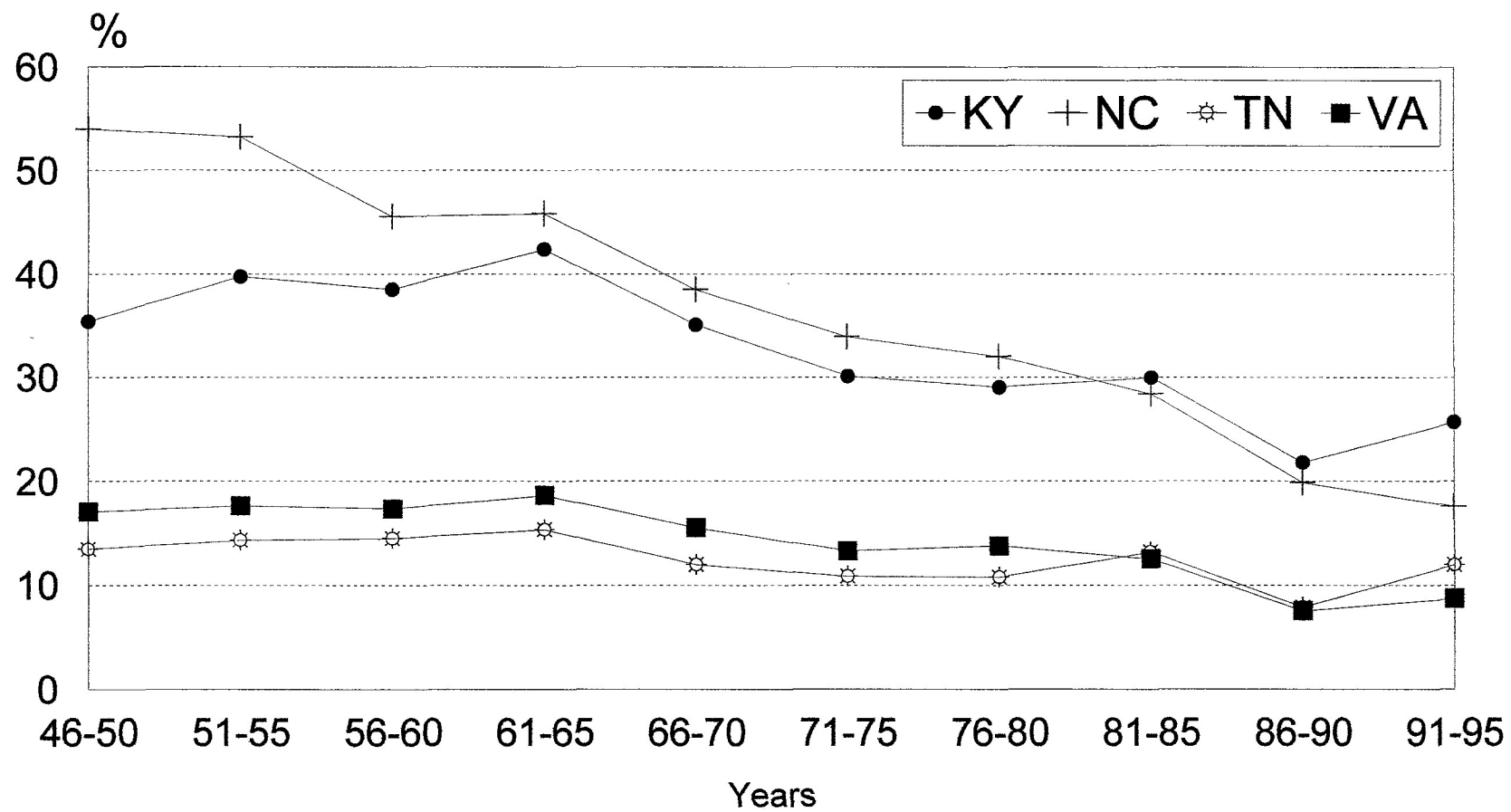


Fig. 5. Tobacco/Total (5-year averages 1946-95)

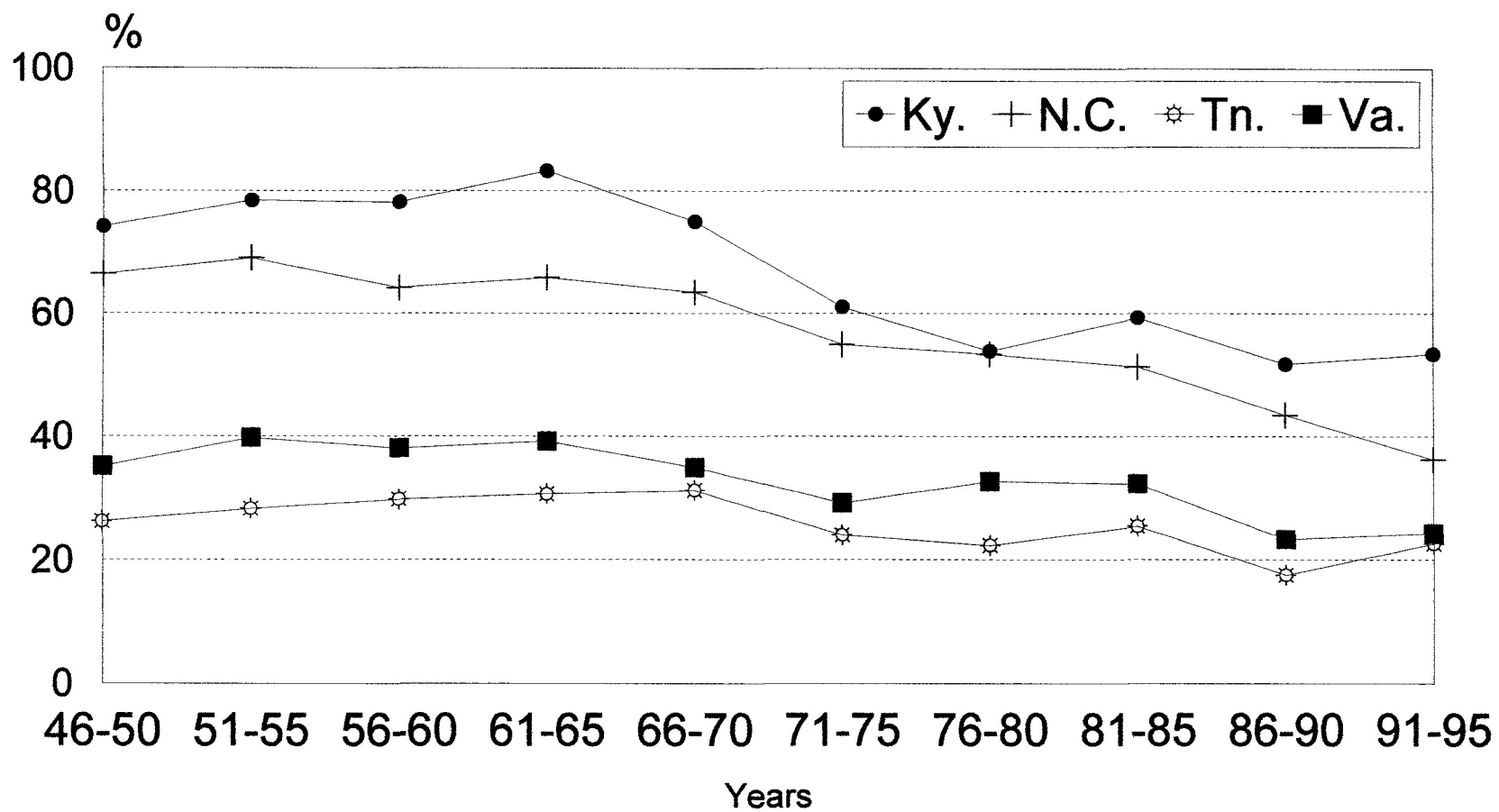


Fig. 6. Tobacco/Crops (5-year averages 1946-95)

Figures 4,5, and 6. For tobacco cash receipts, the states other than NC followed similar patterns; more specifically, there was some fluctuation, but receipts remained relatively consistent until 1981-1985. A decrease through 1968-90 followed. Tobacco receipts were higher in the three states at the last period. NC tobacco receipts experienced greater fluctuation than the other three states and began declining in the 1971-1975 period. Tobacco as a percent of TAR followed similar patterns for all states except NC, namely an increase from the first observation to 1961-1965 followed by a decrease to 1981-85 in KY and TN and to 1986-90 in VA. Following the 1986-1990 period, the percentage increased for the three states. Tobacco as a percent of TAR in NC decreased throughout the 50 years. Tobacco as a percentage of crop receipts fluctuated within each state over the years observed; each state overall, showed a decrease.

Relationships Between Tobacco and Total, Livestock, and Crop Receipts by States

Correlation coefficients were calculated among the receipts for each of the four states using individual year data rather than the five-year averages (Table 3). Tobacco receipts were positively correlated with TAR in all states except NC where no significant relationship was detected. Correlation between tobacco and livestock receipts were negative and significant for NC and VA, but were not significant for KY and TN. Since tobacco receipts are part of crop receipts, correlations between tobacco and crop receipts were positive and significant as expected.

Table 3. Linear correlation coefficients between tobacco receipts with total, livestock and crop receipts (1946-95)

Tobacco	Total	Livestock	Crops
KY	0.2890*	-0.1252ns	0.4936**
NC	-0.0593ns	-0.7607**	0.8611**
TN	0.4682**	0.1894ns	0.6124**
VA	0.5602**	-0.4119**	0.8337**

ns=non significant, *=significant @05, **=significant @01

Table 4. Linear correlation coefficients between agriculture enterprises with year and TAR (1981-95)

Variable	NC		KY		TN		VA	
	Year	TAR	Year	TAR	Year	TAR	Year	TAR
Total	.3884ns		-.7921**		-.9420**		-.5777*	
Livestock	.8912**	.5593*	-.8835**	.6901**	-.8908**	.8075**	-.2976ns	.4809ns
Beef	-.2996ns	-.5696*	.3964ns	-.1388ns	-.3974ns	.2857ns	-.3504ns	.4577ns
Dairy	-.9909**	-.3430ns	-.9572**	.7539**	-.9824**	.9509**	-.9844**	.5580*
Swine	.8359**	.7004**	-.8975**	.6661**	-.9346**	.8721**	-.8618**	.4916ns
Poultry	.8602**	.3712ns	.7543**	-.3911ns	.3873ns	-.2499ns	.8886**	-.4785ns
Misclive (a)	.2717ns	-.4670ns	-.8149**	.4490ns	-.2119ns	.3309ns	.8174**	-.4290ns
Crop	-.1787ns	.7989**	-.5949*	.9443**	-.6829**	.8488**	-.4352ns	.7779**
Tobacco	-.7392**	.2623ns	-.5865*	.8370**	-.5924*	.7380**	-.6712**	.7266**
TobTot (b)	-.8872**	-.0429ns	-.3677ns	.6281**	-.2163ns	.3785ns	-.6470**	.6195*

Table 4 continued

Variable	NC		KY		TN		VA	
	Year	TAR	Year	TAR	Year	TAR	Year	TAR
Corn	-.8269**	.0257ns	-.2064ns	.6112*	.2393ns	-.0554ns	-.4690ns	.5521*
Wheat	-.0968ns	.5643*	-.3627ns	.5216*	-.6563**	.7286**	-.4045ns	.4619ns
Hay	.5647*	-.0563ns	.6629**	-.7893**	.4557ns	-.5754*	.7198**	-.1241ns
Soybeans	-.9011**	-.0576ns	-.7382**	.8700**	-.8516**	.9115**	-.8568**	.6873**
Veg (c)	.5703*	.6509**	.7429**	-.5269*	-.1236ns	.2704ns	.6432**	.0994ns
Fruit	-.2465ns	.2537ns	-.7391**	.6733**	-.1705ns	.1486ns	-.7912**	.5047ns
Ocrop (d)	.9364**	.6088*	.8233**	-.7800**	-.7380**	.7909**	.9539**	-.4237ns
Cotton	.8314**	.7172**	-----	-----	.8002**	-.6560**	.7130**	-.4526ns
Peanuts	-.6503**	-.1179ns	-----	-----	-----	-----	-.5843*	.6598**

ns= not significant, * =sig. @.05, ** =sig. @.01

a=miscellaneous livestock, b=tobacco as part of TAR, c=vegetables, d=other crops

Table 5. Contribution of agriculture enterprises to total agriculture receipts: NC (1981-95)

Year	% Livestock	% Crop	% Tobacco	% Swine	% Poultry	% Dairy	% Beef	% Misclive (a)
1981	41	59	34	9	22	6	3	0
1982	41	59	32	9	21	6	4	1
1983	46	54	27	11	25	7	3	1
1984	46	54	25	9	28	6	2	1
1985	50	50	24	10	29	6	4	1
1986	58	42	18	12	34	6	4	1
1987	56	44	20	13	31	6	5	1
1988	53	47	21	11	32	5	4	1
1989	54	46	20	11	34	5	3	1
1990	51	49	21	12	30	4	3	1
1991	50	50	21	13	29	4	3	1
1992	50	50	19	13	29	4	3	1
1993	53	47	17	15	30	3	3	1
1994	52	48	16	15	30	3	3	1
1995	53	47	15	18	29	3	2	1

Table 5 continued

Year	% Corn	% Wheat	% Hay	% Soybeans	% Veg (b)	% Fruit	% Ocrop (c)	% Cotton	% Peanuts
1981	6	2	0	7	4	1	2	1	4
1982	7	2	0	8	4	1	3	1	3
1983	8	1	0	7	4	1	3	1	2
1984	7	2	0	7	4	1	3	1	3
1985	5	2	0	5	4	1	4	1	3
1986	3	1	0	5	4	1	4	1	3
1987	4	1	0	5	4	1	5	1	3
1988	4	2	0	6	5	1	5	1	3
1989	4	2	0	5	4	1	6	1	2
1990	4	1	0	4	4	1	11	1	3
1991	3	1	0	4	5	1	12	3	2
1992	3	1	0	4	4	1	13	3	2
1993	2	1	0	3	4	1	14	2	2
1994	2	1	0	3	5	1	15	4	2
1995	3	2	0	3	4	1	14	4	1

a=miscellaneous livestock, b=vegetables, c=other crops

Table 6. Contribution of agriculture enterprises to total agriculture receipts: KY (1981-95)

Year	% Livestock	% Crop	% Tobacco	% Swine	% Poultry	% Dairy	% Beef	% Miscive (a)
1981	48	52	33	6	1	11	16	15
1982	44	56	37	6	1	11	12	15
1983	56	44	21	6	1	12	16	21
1984	52	48	36	6	1	10	14	22
1985	47	53	23	5	1	9	13	19
1986	56	44	20	6	1	12	16	21
1987	61	39	19	7	1	12	19	22
1988	61	39	23	6	1	11	21	22
1989	57	43	21	6	1	10	21	18
1990	55	45	25	6	1	10	22	16
1991	54	46	27	5	2	8	24	15
1992	51	49	30	5	2	9	21	14
1993	51	49	25	4	3	7	23	13
1994	51	49	26	4	3	8	20	15
1995	53	47	21	4	4	9	18	18

Table 6 continued

Year	% Corn	% Wheat	% Hay	% Soybeans	% Veg (b)	% Fruit	% Ocrop (c)
1981	9	3	0	10	1	0	1
1982	8	3	0	11	1	0	1
1983	5	2	1	8	1	0	1
1984	6	2	1	12	1	0	1
1985	11	1	1	9	1	0	1
1986	7	1	2	7	1	0	2
1987	7	1	2	7	1	0	2
1988	5	3	2	7	1	0	2
1989	7	3	2	6	1	0	2
1990	7	2	2	7	1	0	2
1991	7	1	2	7	1	0	2
1992	8	2	2	7	1	0	2
1993	9	2	2	7	1	0	2
1994	9	2	2	8	1	0	2
1995	10	3	2	8	1	0	2

a=miscellaneous livestock, b=vegetables, c=other crops

Table 7. Contribution of agriculture enterprises to total agriculture receipts: TN (1981-95)

Year	% Livestock	% Crop	% Tobacco	% Swine	% Poultry	% Dairy	% Beef	% Miscive (a)
1981	44	56	15	8	6	16	13	1
1982	46	54	16	9	6	16	14	1
1983	50	50	12	7	6	16	20	1
1984	51	49	13	7	7	13	23	1
1985	50	50	10	8	6	14	21	1
1986	57	43	7	9	8	15	24	1
1987	57	43	7	7	6	14	29	1
1988	55	45	8	7	7	14	26	1
1989	55	47	7	8	9	14	23	1
1990	53	47	10	7	7	14	23	1
1991	53	47	12	6	8	13	25	1
1992	48	52	13	5	8	12	21	1
1993	47	53	13	5	10	12	19	1
1994	45	55	11	4	9	11	19	1
1995	41	59	11	4	10	11	15	1

Table 7 continued

Year	% Corn	% Wheat	% Hay	% Soybeans	% Veg (b)	% Fruit	% Ocrop (c)	% Cotton
1981	3	6	0	19	2	0	8	4
1982	3	5	0	15	2	0	8	6
1983	2	4	0	15	2	0	9	4
1984	4	3	1	13	2	1	8	5
1985	6	1	1	13	3	0	6	5
1986	4	1	1	9	3	1	8	6
1987	3	1	1	9	2	1	8	10
1988	3	3	1	12	2	1	8	8
1989	4	4	1	9	2	0	8	9
1990	3	2	1	10	2	0	8	10
1991	4	1	1	9	3	1	8	9
1992	5	2	1	9	2	0	8	12
1993	5	2	1	9	3	1	9	9
1994	5	2	1	10	3	0	9	13
1995	6	3	1	10	3	0	10	14

a=miscellaneous livestock, b=vegetables, c=other crops

Table 8. Contribution of agriculture enterprises to total agriculture receipts: VA (1981-95)

Year	% Livestock	% Crop	% Tobacco	% Swine	% Poultry	% Dairy	% Beef	% Miscive (a)
1981	57	43	17	6	18	18	14	0
1982	60	40	13	7	17	17	19	0
1983	63	37	12	7	21	19	15	0
1984	64	36	12	5	22	15	19	3
1985	64	36	9	4	23	17	16	4
1986	70	30	7	5	26	17	18	4
1987	72	28	7	5	22	16	26	4
1988	67	33	8	3	23	14	22	4
1989	65	35	8	3	25	14	20	4
1990	64	36	9	4	24	14	18	4
1991	64	36	10	4	25	13	18	4
1992	63	37	9	3	26	14	16	4
1993	67	33	8	4	29	13	16	5
1994	64	36	8	3	30	12	13	5
1995	62	38	8	3	31	12	11	5

Table 8 continued

Year	% Corn	% Wheat	% Hay	% Soybeans	% Veg (b)	% Fruit	% Ocrop (c)	% Cotton	% Peanuts
1981	4	3	1	5	3	3	3	0	5
1982	4	3	1	6	3	3	3	0	4
1983	2	3	1	6	3	3	3	0	4
1984	4	2	1	6	3	3	3	0	4
1985	5	2	1	6	3	3	3	0	3
1986	2	1	1	5	3	3	3	0	5
1987	1	1	1	4	3	4	4	0	4
1988	1	2	1	5	5	3	4	0	4
1989	2	2	1	5	5	2	5	0	4
1990	3	2	1	5	5	2	5	0	5
1991	2	1	1	4	5	3	6	0	4
1992	3	2	1	4	5	2	6	0	4
1993	2	2	1	4	4	2	6	0	3
1994	2	2	1	4	5	2	6	1	4
1995	3	3	1	4	5	3	6	2	3

a=miscellaneous livestock, b=vegetables, c=other crops

1981-1995

Relationships Between Total Receipts and Various Livestock and Crop Receipts by States

The relationship of time (years) and TAR with receipts for various agriculture enterprises in each of the four states was studied using correlation coefficients (Table 4). Contributions of the various agriculture enterprises to TAR are given in Tables 5-8.

North Carolina

Correlations were positive and significant between years and receipts for livestock (collectively), swine, poultry, cotton, hay, vegetables (veg), and other crops (ocrop). Variables that resulted in significant negative correlations with year were dairy, corn, soybeans, peanuts, tobacco, and tobacco as a percent of TAR (tobtot). The remaining variables were not significantly correlated with year.

Contributions of the enterprises to TAR in NC are presented in Table 5. Considering the variables that were positive and significantly correlated with year, livestock receipts increased from 41% to 53%, swine receipts increased from 9% to 18%, poultry from 22% to 29%, cotton from 1% to 4%, and other crops (ocrops) from 2% to 14%. Wheat, vegetables, and fruit remained relatively consistent over the period. Considering the variables that were negative and significantly correlated with year during the 15-year period, dairy decreased from 6% to 3%, tobacco receipts decreased from 34% to 15%, soybeans from 7% to 3%, and peanuts from 4% to 1%.

Agriculture enterprise receipts that were significantly correlated with TAR included positive relationships with livestock (collectively), swine, crops (collectively),

cotton, vegetables, wheat and other crops (ocrop), and negative relationships with beef (Table 4). The remaining enterprise receipts were not significantly correlated with TAR.

Kentucky

Enterprise receipts that resulted in positive and significant correlation coefficients with year were poultry, hay, vegetables (veg), and other crops (ocrop) (Table 4).

Enterprises that resulted in negative and significant correlation were TAR, livestock, dairy, swine, miscellaneous livestock (misclive), crops, soybeans, tobacco and fruit. The remaining variables were not significantly correlated with year.

Contribution of the enterprises to TAR in KY are given in Table 6. During the 15-year period, livestock (collectively) increased from 48% to 53%, beef from 16% to 18%, poultry from 1% to 4%, miscellaneous livestock (misclive) from 15% to 18%, hay from 0% to 2%, other crops (ocrop) increased from 1% to 2%, vegetables and fruit remained relatively consistent, whereas, dairy receipts decreased from 11% to 9%, swine from 6% to 4%, crops (collectively) from 52% to 47%, soybeans from 10% to 8%, and tobacco decreased from 33% to 21%.

Enterprise receipts that were significantly correlated with TAR in KY included positive relationships with livestock (collectively), dairy, swine, crops (collectively), corn, soybeans, wheat, tobacco, tobacco as a percent of TAR, and fruit; negative relationships with other crops (ocrop) and vegetables (Table 4). The remaining enterprise receipts were not significantly correlated with TAR.

Tennessee

Cotton was the only enterprise that resulted in a positive and significant correlation with year for the 15-year period (Table 4). Enterprises that resulted in a negative and significant correlation coefficients were TAR, livestock (collectively), dairy, swine, crops (collectively), tobacco, soybeans, wheat, and other crops (ocrop). The remaining variables were not significantly correlated with year.

Contribution of the enterprises to TAR in TN are given in Table 7. During the 15-year period, crops increased from 56% to 59%, poultry from 6% to 10%, beef from 13% to 15%, corn from 3% to 6%, hay 0% to 1%, cotton from 4% to 14%, vegetables (veg) from 2% to 3%, and other crops (ocrop) increased from 8% to 10%; conversely, livestock (collectively) decreased from 44% to 41%, dairy from 16% to 11%, swine from 8% to 4%, soybeans from 19% to 10%, and tobacco from 15% to 11%.

Enterprise receipts that were significantly correlated with TAR in TN included positive relationships with livestock (collectively), dairy, swine, crops (collectively), tobacco, soybeans, and other crops (ocrop) (Table 4). Hay and cotton receipts were negative and significantly correlated with TAR. The remaining enterprise receipts were not significantly correlated with TAR.

Virginia

Enterprise receipts that resulted in positive and significant correlation coefficients with year were poultry, miscellaneous livestock (misclive), cotton, hay, vegetables (veg), and other crops (ocrop) (Table 4). Enterprises that resulted in negative and significant correlation were TAR, dairy, swine, peanuts, soybeans, tobacco, tobacco as a percent of

TAR (tobtot), and fruit. The remaining variables were not significantly correlated with year.

Contributions of the enterprises to TAR in VA are given in Table 7. During the 15-year period, livestock (collectively) increased from 57% to 62%, poultry 18% to 31%, miscellaneous livestock (misclive) from 0% to 5%, vegetables from 3% to 5% and other crops (ocrop) from 3% to 6%; in contrast, crops (collectively) decreased from 43% to 38%, tobacco from 17% to 8%, corn from 4% to 3%, peanuts from 5% to 3%, soybeans from 5% to 4%, swine from 6% to 3%, dairy from 18% to 12% and beef 14% to 11%.

Enterprise receipts that were significantly correlated with TAR in VA included positive relationships with dairy, crops (collectively), peanuts, soybeans, tobacco, and tobacco as a percent of TAR (Table 4). The remaining enterprises were not significantly correlated with TAR.

CHAPTER V

DISCUSSION

In nominal terms, each of the four states experienced an increase in total agriculture receipts over the 50-year period (1946-1995). Although increases for economic indices may occur over time, such increases may be deceiving in that they reflect inflationary effects. In the present study, adjusting nominal total agriculture receipts data for inflation (CPI) altered the responses over time. In real terms, only North Carolina's total agriculture receipts increased during the period, Kentucky's total agriculture receipts remained relatively stable, Tennessee and Virginia's total agriculture receipts decreased. Throughout the period, total agriculture receipts were highest in North Carolina, intermediate in Kentucky, lowest and about equal, in Tennessee and Virginia.

Total agriculture receipts is a complex index, reflecting receipts from varying and changing agriculture enterprises. Even stable total agriculture receipts over time would not imply a constant agriculture system. Thus, the relatively stable total agriculture receipts over the period and the rather consistent ranking of the states during the period do not indicate an absence of changes in agriculture enterprises within the states.

An objective of the present study was to characterize the contribution of tobacco to total agriculture receipts for the four states. Tobacco has been a major source of farm

income, contributing approximately one-half of total agriculture receipts for Kentucky and North Carolina during the early years of the study period. Tobacco receipts continued to be a major, but decreasing source of income in all states throughout the period. Consequently, the loss of tobacco as a crop would have serious effects on the farm economy as well as the general economy of each state.

The agriculture economy in North Carolina differed from that of the other states in a number of ways. First, it had the highest total agriculture receipts throughout. Second, it had the only total agriculture receipts that increased in real dollars. Third, it experienced the most significant change in agriculture enterprises going from a major crop to a major livestock economy during the 50-years. Fourth, swine, poultry, cotton, and other crop (ocrop) enterprises receipts increased significantly during the 1981-1985 period. Fifth, it reflected the most marked decline in dependence upon tobacco.

The agriculture economy in Kentucky produced total agriculture receipts that were lower than those of North Carolina, but higher than those of Tennessee and Virginia throughout the period. Although Kentucky's total agriculture receipts increased between the 1960's and the 1980's, Total agriculture receipts in real dollars were essentially the same at the beginning and ending of the 50-year period. Livestock and crop receipts were about equal and remained relatively consistent during the period. Although the contribution of tobacco to total agriculture receipts decreased, tobacco continued to contribute a larger portion of total agriculture receipts in Kentucky than in the other states. Consequently, the loss of tobacco as an agriculture enterprise would be most severely felt in Kentucky. During the 1981-1995 period (Table 4), the decrease in

tobacco contribution was countered somewhat by increases in receipts from livestock (collectively), beef, poultry, miscellaneous livestock (misclive), and hay. Correlations between year and receipts for poultry, hay, vegetables, and other crops (ocrop) were high and positive. Although these increases were statistically significant, the four enterprises contributed a total of only nine percent to Kentucky's total agriculture receipts in 1995 (Table 6).

Agriculture receipts in Tennessee and Virginia were similar in several aspects. Their total agriculture receipts were approximately equal over the period of study, crops (collectively) and livestock (collectively) contributed about equally in both states, and both states experienced a decline in total agriculture receipts over the 50-years. Tobacco contributions to total agriculture receipts have been comparable, including the more recent decline. Examination of individual enterprises (Table 4) show that only cotton receipts have increased significantly during the 1981-95 period in Tennessee. However, receipts from poultry, miscellaneous livestock (misclive), cotton, hay, and vegetables have increased in Virginia and, in 1995, contributed approximately 41% of the total agriculture receipts (Table 8). For several years poultry receipts have been the major contributor (approximately 30%) to Virginia's total agriculture receipts.

Total agriculture receipts is a composite of the livestock and crop receipts for each of the states. Maximizing total agriculture receipts over the long term requires selection and production of enterprises that effectively utilize the state's natural and human resources, that are supported by marketing and processing infrastructures, and that respond to changing consumer needs. It is apparent that these principles have been

more successfully applied to the agricultural economy in North Carolina than to that of the other three states.

An objective of the present study was to relate diversification patterns from other states to Kentucky's present status. It does not follow that a successful combination of enterprises is directly transferrable from one state to another.

Comparisons of agriculture enterprises in Kentucky and North Carolina revealed both similarities and differences. In 1995, the two states had the same livestock to crop balance for total agriculture receipts. North Carolina was mainly dependent upon poultry, an expanding enterprise; Kentucky was mainly dependent upon tobacco, a declining industry. North Carolina received about the same contribution from swine as Kentucky did from beef. North Carolina experienced increasing contribution from other crops (ocrops), including greenhouse production and nursery plants. Kentucky continued to have a strong input from miscellaneous livestock (misclive), primarily horses. Poultry has been producing the highest receipts (approximately 30% of total agriculture receipts) of any agriculture enterprise in North Carolina (Table 5). Kentucky poultry receipts reached 4% of its total agriculture receipts in 1995.

In 1995, poultry was the strongest contributor in North Carolina (29%) and Virginia (31%) and a significant contributor in Tennessee (10%). Although poultry contribution to Kentucky has been increasing, it was only 4% in 1995. In comparison, contributions of tobacco to total agriculture receipts in 1995 were North Carolina (15%), Virginia (8%), Tennessee (11%), and Kentucky (21%). Considering only the dollar receipts to producers, poultry was more important than tobacco in these states.

Expansion of the poultry industry is an available opportunity especially in Kentucky, provided that environmental risk can be controlled.

Hay and other crops (ocrops) receipts were positively correlated with Kentucky total agriculture receipts (Table 4) and contributed 2% each in 1995 (Table 6). Quality hay production is compatible with Kentucky's soils and climate and is non-damaging to the environment. Also, quality hay production supports the states's significant horse production enterprise and complements other crop enterprises in crop management systems. Other crops (ocrops), including greenhouse and nursery plant production, provide opportunities for more effective year-around labor utilization comparable to that required by tobacco production.

CHAPTER VI

CONCLUSION

Based upon the 1946-95 period, state rankings for total agriculture receipts were North Carolina highest, Kentucky intermediate, and Tennessee and Virginia lowest and about equal. In real dollars, total agriculture receipts increased in North Carolina, remained about the same in Kentucky, and decreased in Tennessee and Virginia during the 50-year period.

State rankings for tobacco receipts were the same as the rankings for total agriculture receipts. Tobacco receipts were relatively consistent in Kentucky, Tennessee, and Virginia, but decreased for North Carolina. When tobacco receipts are expressed as percentage of total agriculture receipts, Kentucky is the most tobacco dependent state. Tobacco continues to be a major, but declining, enterprise in each of the four states.

Poultry exceeds tobacco in contribution to total agriculture receipts in North Carolina and Virginia and as an average of the four states; Kentucky is a minor poultry producer.

Based upon the 15-year period (1981-95), Kentucky enterprises that were positively and significantly correlated with year were poultry, hay, vegetables, and other crops (greenhouse and nursery plants). Kentucky enterprises that were negative and significantly correlated with year were dairy, swine, miscellaneous livestock (horses), fruit, soybeans, and tobacco.

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APPENDICES

Appendix A
Real Agriculture Receipts for NC 1946-1995 (\$,000)

50

Year	Total	Livestock	Crop	Tobacco
1946	3467107	557642	2909465	2128549
1947	3257906	578154	2679752	1627556
1948	3249340	634830	2614510	1562021
1949	2990025	618581	2371445	1523030
1950	3266092	641088	2625004	1946732
1951	3574702	737577	2837125	2018604
1952	3528723	767813	2760910	1716854
1953	3360409	818086	2542323	1702955
1954	3474993	831363	2643629	1856491
1955	3490541	831951	2658590	1983194
1956	3635475	880725	2754750	1837214
1957	3083835	940489	2143345	1301109
1958	3497093	1085007	2412087	1520017
1959	3293575	1011344	2282231	1423133
1960	3642661	1057859	2584802	1760896
1961	3742000	1074333	2667667	1852713
1962	3811467	1134362	2677105	1855313
1963	3763485	1118071	2645414	1777330
1964	3963965	1185612	2778353	1801054
1965	3740846	1290594	2450252	1430676
1966	3936739	1458058	2478681	1576693
1967	3775027	1366198	2408829	1577717
1968	3489070	1422721	2066349	1252059
1969	3729870	1575934	2153936	1369318
1970	3879133	1570533	2308601	1469234
1971	3714063	1463513	2250550	1371190
1972	3904000	1511464	2392536	1366882
1973	5151004	2101182	3049823	1552361
1974	5071967	1772867	3299100	1606751
1975	4816766	1795164	3021602	1721649
1976	4848131	1843765	3004366	1717246
1977	4222622	1719528	2503093	1400428
1978	4780205	1915448	2864758	1672129
1979	4429424	1856379	2573044	1130708
1980	4196198	1664251	2531947	1296304
1981	4206034	1706609	2499426	1413936
1982	4010567	1660422	2350144	1280116
1983	3587106	1661831	1925274	960871
1984	3977010	1831227	2145783	1013417
1985	3596685	1791161	1805524	870278
1986	3407153	1964807	1442346	617086
1987	3264682	1832964	1431718	638380
1988	3444257	1810768	1633490	738705
1989	3672393	1996398	1675995	718836
1990	3909058	1977379	1931679	804366
1991	3816563	1902061	1914502	796941
1992	3919321	1962084	1957237	745944
1993	4143413	2187903	1955510	705900
1994	4301497	2223761	2077736	684325
1995	4551670	2433445	2118225	683077

Appendix B
Real Agriculture Receipts for KY 1946-1995 (\$,000)

51

Year	Total	Livestock	Crop	Tobacco
1946	2027423	1038879	988544	878047
1947	2512850	1226675	1286175	757509
1948	2449925	1337029	1112896	848938
1949	2264593	1186928	1077496	811504
1950	2042736	1102116	940620	672332
1951	2311774	1251136	1060638	858657
1952	2129577	1116532	1013045	879985
1953	2021862	991561	1030301	787357
1954	2093599	956910	1136689	912959
1955	1946392	862549	1083843	732951
1956	2013351	922775	1090576	845587
1957	2000092	1002387	997704	730060
1958	1895654	1031893	863761	725910
1959	1941116	976759	964357	715687
1960	1878564	986020	892544	730007
1961	2119800	1011787	1108013	889997
1962	2048941	1037947	1010993	915493
1963	2095832	1031298	1064534	1056764
1964	2383696	1038186	1345510	845587
1965	2209959	1165994	1043965	868871
1966	2161869	1166772	995097	863301
1967	2421419	1123339	1298080	827156
1968	2323411	1254087	1069324	838518
1969	2350488	1293761	1056727	787825
1970	2316038	1290814	1025224	732033
1971	2300796	1306355	994440	684319
1972	2553868	1396064	1157805	816273
1973	2933693	1625011	1308682	635203
1974	2867832	1127480	1740353	982493
1975	2644389	1206155	1438234	873362
1976	2794034	1253595	1540440	989699
1977	2907892	1193535	1714357	888209
1978	3013186	1476804	1536383	898318
1979	2679447	1191863	1487584	638609
1980	3101881	1558343	1543538	797940
1981	2983581	1438919	1544662	970980
1982	2963570	1312905	1650665	1088075
1983	2610897	1456208	1154689	560676
1984	2564427	1343286	1221142	932145
1985	2722300	1273238	1449062	620069
1986	2191932	1232466	959466	441740
1987	2148006	1306285	841721	412792
1988	2074235	1261675	812560	482211
1989	2317032	1310193	1006838	489520
1990	2315882	1266261	1049621	582559
1991	2317681	1240796	1076885	626165
1992	2250890	1149889	1101001	676337
1993	2336021	1182966	1153054	573608
1994	2151130	1101494	1049636	561739
1995	1993136	1052476	940660	414648

Appendix C
Real Agriculture Receipts for TN 1946-1995 (\$,000)

52

Year	Total	Livestock	Crop	Tobacco
1946	1834730	846823	987907	279609
1947	2024154	972094	1052060	251585
1948	2081855	1005643	1076212	269751
1949	1830343	911301	919042	233347
1950	1710996	873924	837072	237540
1951	1946728	1052404	894325	272811
1952	1939341	944918	994423	272082
1953	1781450	827978	953472	231301
1954	1758442	842629	915813	261221
1955	1608534	785754	822780	252310
1956	1756351	810518	945833	273203
1957	1623697	877120	746577	235229
1958	1691242	941346	749896	254107
1959	1769932	861412	908520	241150
1960	1714289	880607	833681	234913
1961	1815497	898077	917420	297930
1962	1749365	910806	838559	276457
1963	1792722	902427	890294	286036
1964	1887744	883083	1004660	276785
1965	1958478	1003167	955311	268352
1966	1833757	1050125	783632	245666
1967	1773770	1058100	715670	220313
1968	1756197	1049538	706659	239721
1969	1786292	1098610	687682	208164
1970	1775987	1100711	675276	199942
1971	1816479	1019883	796596	194606
1972	2000179	1211268	788911	220831
1973	2519968	1447039	1072929	193593
1974	1935669	884813	1050855	237383
1975	1991276	1047043	926294	249499
1976	2251780	1160426	1091354	280978
1977	2206704	1088593	1118111	262617
1978	2400942	1282672	1118270	265634
1979	2320073	1245684	1074389	188103
1980	2012902	1025123	987779	208831
1981	2056432	906896	1149536	305095
1982	1997154	920263	1076890	314375
1983	1780090	894835	885255	209702
1984	1961639	1002940	958699	263184
1985	1817985	914898	903088	183156
1986	1652751	939104	713647	114210
1987	1687815	958984	728832	117349
1988	1593168	871505	721663	131753
1989	1524359	839774	684585	109596
1990	1490715	783555	707161	149506
1991	1385898	732002	653896	161593
1992	1473495	703938	769557	190887
1993	1389204	659532	729671	177545
1994	1450635	649104	801530	165942
1995	1385490	565761	819729	152036

Appendix D
Real Agriculture Receipts for VA 1946-1995 (\$,000)

Year	Total	Livestock	Crop	Tobacco
1946	1718795	845191	873605	351316
1947	1753718	886432	867286	255526
1948	1824166	958577	865589	283224
1949	1742386	952178	790208	254949
1950	1743456	890568	852888	349644
1951	1908649	1046936	861713	348260
1952	1887056	1031041	856015	345787
1953	1743223	1028587	714636	231216
1954	1702360	959925	742434	314584
1955	1607761	877123	730638	316858
1956	1698091	873264	824826	327804
1957	1555655	867736	687919	234690
1958	1592955	902329	690626	272346
1959	1511235	818588	692646	262724
1960	1576809	859138	717671	280668
1961	1602697	836430	766267	305033
1962	1648615	847391	801224	331859
1963	1543424	872201	671223	265149
1964	1601196	800981	800215	323609
1965	1613723	842270	771453	267365
1966	1539672	856936	682736	246419
1967	1511758	805086	706673	245658
1968	1465969	817710	648259	209096
1969	1529703	871194	658509	250751
1970	1498726	840935	657791	219794
1971	1504951	856049	648903	219910
1972	1551965	907652	644313	213285
1973	1998701	1097706	900996	264649
1974	1871792	873254	998538	203416
1975	1816587	945450	871137	254760
1976	1781919	953567	828352	283333
1977	1617320	901514	715807	267403
1978	1819032	1044666	774366	260771
1979	1756962	1031614	725348	199451
1980	1691151	1100184	590966	180574
1981	1707491	965477	742015	282506
1982	1682742	1012901	669841	226323
1983	1451880	919564	532316	168443
1984	1682661	1072104	610557	196669
1985	1518642	971189	547453	141085
1986	1479019	1041300	437719	100280
1987	1506276	1084488	421788	101530
1988	1579627	1053751	525876	121909
1989	1640297	1071545	568752	124832
1990	1598016	1023309	574706	140689
1991	1529732	979004	550728	145914
1992	1510961	954588	556373	138829
1993	1455735	970557	485178	117078
1994	1465709	941504	524205	122526
1995	1464503	907609	556894	124321

Appendix E
Real Cash Receipts for Agriculture Enterprises in NC 1981-1995 (\$,000)

YEAR	TOTAL	LIVESTOCK	CROP	TOBACCO	SWINE	POULTRY	DAIRY	BEEF	MISCLIVE	VEG
1981	4206034	1706609	2499426	1413936	380466	918357	254872	133744	19052	148171
1982	4010567	1660422	2350144	1280116	378439	850296	246406	144862	40296	144652
1983	3587106	1661831	1925274	960871	377559	896229	241943	105364	40576	160835
1984	3977010	1831227	2145783	1013417	361762	1114814	226781	88507	39220	171203
1985	3596685	1791161	1805524	870278	354514	1029732	225924	141290	39615	139544
1986	3407153	1964807	1442346	617086	396368	1167314	208796	152862	39286	131631
1987	3264682	1832964	1431718	638380	431490	998286	192858	165258	44743	136711
1988	3444257	1810768	1633490	738705	371727	1092515	182303	122270	41708	154994
1989	3672393	1996398	1675995	718836	403483	1248630	177464	123423	43199	156148
1990	3909058	1977379	1931679	804366	459753	1178854	175477	123797	39331	162867
1991	3816563	1902061	1914502	796941	482441	1099987	148127	133012	38287	178174
1992	3919321	1962084	1957237	745944	515020	1136225	154231	118821	37479	139127
1993	4143413	2187903	1955510	705900	637875	1249735	144889	117963	37002	174045
1994	4301497	2223761	2077736	684325	656505	1276876	140636	111349	38037	194578
1995	4551670	2433445	2118225	683077	830199	1339636	124874	99126	39307	181261

Appendix E Continued

YEAR	FRUIT	OCROPS	CORN	WHEAT	HAY	COTTON	SOYBEAN	PEANUT
1981	50874	98696	253323	59774	4845	21601	274888	146228
1982	31205	104703	263153	65639	4703	33769	299729	108413
1983	38664	109885	187281	53648	4099	29273	258766	76251
1984	58313	116086	320424	76078	4347	31058	274758	122264
1985	24489	126040	272946	63157	7093	32023	212153	122941
1986	23452	142348	180381	37635	7804	29977	174116	131251
1987	35225	178721	116954	39879	9251	35490	196268	113730
1988	46561	183276	170671	73529	6933	27951	235532	118436
1989	31590	202034	189161	79490	6553	50474	231176	108075
1990	29939	415217	193204	62628	7170	77831	204969	165984
1991	38463	456061	145373	46593	9236	136125	187429	126506
1992	29099	519493	177990	82165	9998	144133	203467	126164
1993	31778	600168	139177	69012	8202	132762	195466	94968
1994	38350	632271	148969	92729	10310	261992	217329	133988
1995	37907	622608	179244	109895	11608	313984	185646	103418

Appendix F
Real Cash Receipts for Agriculture Enterprises in KY 1981-1995 (\$,000)

YEAR	TOTAL	LIVESTOCK	CROP	TOBACCO	SWINE	POULTRY	DAIRY	BEEF	MISCLIVE	VEG
1981	2983581	1438919	1544662	970980	176747	29530	316996	463964	450626	14957
1982	2963570	1312905	1650665	1088075	164537	24505	315369	363984	443583	15936
1983	2610897	1456208	1154689	560676	151276	23478	310513	413478	556655	16022
1984	2564427	1343286	1221142	932145	142740	27443	251839	365985	554233	16234
1985	2722300	1273238	1449062	620069	126500	21357	247217	361651	515406	16578
1986	2191932	1232466	959466	441740	140222	22004	254167	360044	455032	14157
1987	2148006	1306285	841721	412792	156185	20322	250958	405408	471952	21372
1988	2074235	1261675	812560	482211	124061	18415	233178	432649	452057	16809
1989	2317032	1310193	1006838	489520	147557	20548	235331	486636	418952	17457
1990	2315882	1266261	1049621	582559	138371	18984	232455	506591	368981	19499
1991	2317681	1240796	1076885	626165	113270	40773	191262	553811	340997	21368
1992	2250890	1149889	1101001	676337	103125	55783	200335	481436	308389	19832
1993	2336021	1182966	1153054	573608	101374	60580	167373	526838	305561	20830
1994	2151130	1101494	1049636	561739	87945	71973	178555	432929	329363	20090
1995	1993136	1052476	940660	414648	77610	78202	171938	357164	366734	18811

Appendix F Continued

YEAR	FRUIT	OCROPS	CORN	WHEAT	HAY	SOYBEAN
1981	11574	32946	265033	96398	14252	289482
1982	9800	28588	233740	75818	14680	322053
1983	10641	23639	119449	55636	15697	205474
1984	10191	26078	155448	55689	20880	303337
1985	8435	34579	294414	31445	31927	233038
1986	6481	41710	161550	19142	38149	160826
1987	9735	47079	153444	29678	40621	154219
1988	7833	48416	96561	53179	45594	145392
1989	7489	49818	160045	64256	49071	150511
1990	5520	43911	170993	42643	40401	170484
1991	7985	49606	167635	21004	36926	156394
1992	7474	51911	176650	41457	34483	147813
1993	8020	47740	203233	39281	38943	162253
1994	5324	47091	185652	51703	39048	173474
1995	7616	48320	190433	62339	31876	162837

Appendix G
Real Cash Receipts for Agriculture Enterprises in TN 1981-1995 (\$,000)

YEAR	TOTAL	LIVESTOCK	CROP	TOBACCO	SWINE	POULTRY	DAIRY	BEEF
1981	2056432	906896	1149536	305095	162746	126145	328223	268535
1982	1997154	920263	1076890	314375	183348	115767	312111	288505
1983	1780090	894835	885255	209702	123990	107663	291478	350538
1984	1961639	1002940	958699	263184	139731	127971	261972	453085
1985	1817985	914898	903088	183156	144978	107167	257869	389605
1986	1652751	939104	713647	114210	153319	127202	248503	393690
1987	1687815	958984	728832	117349	116122	105891	236634	482697
1988	1593168	871505	721663	131753	109433	111448	217025	418118
1989	1524359	839774	684585	109596	126402	132910	211816	353894
1990	1490715	783555	707161	149506	103324	110345	210058	341233
1991	1385898	732002	653896	161593	82500	115868	173416	342483
1992	1473495	703938	769557	190887	71606	117144	183805	310577
1993	1389204	659532	729671	177545	70548	137032	171632	259872
1994	1450635	649104	801530	165942	51804	131588	165257	280914
1995	1385490	565761	819729	152036	56078	132245	155980	202260

Appendix G Continued

YEAR	MISCLIVE	VEG	FRUIT	OCROPS
1981	20934	36938	7406	173246
1982	20250	35332	5159	166886
1983	20913	30376	5370	162427
1984	19972	48059	11108	149270
1985	15078	48977	6377	118066
1986	16189	44740	9104	133306
1987	17231	37662	8698	132267
1988	15184	39286	9798	127474
1989	14400	27291	7099	126902
1990	18318	35867	6827	123724
1991	17449	35041	7542	116154
1992	16438	33642	7082	121008
1993	20054	36849	7154	125334
1994	19317	42900	4989	127240
1995	18938	37397	6324	133515

Appendix H
Real Cash Receipts for Agriculture Enterprises in VA 1981-1995 (\$,000)

YEAR	TOTAL	LIVESTOCK	CROP	TOBACCO	SWINE	POULTRY	DAIRY
1981	1707491	965477	742015	282506	107541	315582	298950
1982	1682742	1012901	669841	226323	117058	285065	289821
1983	1451880	919564	532316	168443	99695	308829	281293
1984	1682661	1072104	610557	196669	77204	364976	256087
1985	1518642	971189	547453	141085	61566	355775	254392
1986	1479019	1041300	437719	100280	75490	386522	249412
1987	1506276	1084488	421788	101530	68403	325146	234086
1988	1579627	1053751	525876	121909	52776	368838	219974
1989	1640297	1071545	568752	124832	47776	402508	221840
1990	1598016	1023309	574706	140689	69006	376093	222197
1991	1529732	979004	550728	145914	61613	374849	195305
1992	1510961	954588	556373	138829	52175	391454	205700
1993	1455735	970557	485178	117078	54073	423908	189643
1994	1465709	941504	524205	122526	48243	443641	181878
1995	1464503	907609	556894	124321	41264	453013	173511

Appendix H Continued

YEAR	BEEF	MISCLIVE	VEG	FRUIT	OCROPS
1981	234639	3113	57527	55160	44099
1982	313629	2376	44884	54110	45574
1983	223231	2664	36767	48770	43993
1984	314904	55219	50125	53312	42704
1985	240660	54904	45070	37979	46897
1986	268951	53832	40512	40953	45815
1987	391439	58348	42688	53906	55386
1988	347911	58831	84270	46289	65983
1989	334107	60111	83355	40312	78115
1990	294940	57078	84958	24445	79018
1991	280785	62551	72653	38807	85970
1992	237048	63697	73453	33038	90586
1993	232717	65719	58656	29951	92981
1994	195340	68754	75941	30146	94182
1995	164411	71920	71604	36666	91307